

AMENDMENTS TO THE CLAIMS

1. (Previously presented) A method of extraction of phytosterols, squalene and vitamin E from crude palm oil comprising the steps of:

- a) conversion of crude palm oil into palm oil methyl esters;
- b) three short path distillation of crude palm oil methyl esters obtained in step a) to yield phytonutrients concentrate;
- c) saponification of phytonutrients concentrate from step b);
- d) crystallization of phytosterols;
- e) solvent partitioning of vitamin E and squalene.

2-7. (Cancelled)

8. (Previously presented) A method as claimed in claim 20, wherein the unsaponifiable matters is mixed with hydrocarbon solvent, short chain alcohol and water of ratio 25:1:1 and heated to temperature of 65°C to 85°C and slowly cooled to temperature of 10°C to 30°C to crystallize phytosterols.

9. (Previously presented) A method as claimed in claim 21, wherein the ratio of hydrocarbon solvent to short chain alcohol used to partition squalene and vitamin E is 5:3.

10. (Cancelled)

11. (Withdrawn) Vitamin E, squalene or phytosterols as extracted as in claim 1.

12. (Withdrawn - currently amended) ~~A method~~ The method of extraction of phytosterols, squalene and vitamin E from crude palm oil as recited in claim 1, comprising the steps of:

- i. conversion of crude palm oil into palm oil methyl esters;

- ii. first stage short path distillation carried out on the crude palm oil methyl esters obtained in step (i) above at a temperature of 70°C to 120°C and pressure between 10 mTorr to 50 mTorr;
- iii. second stage short path distillation carried out on the residue obtained in step (ii) above at a temperature of 130°C to 200°C and pressure less than 1 mTorr;
- iv. third stage short path distillation carried out on the distillate obtained in step (iii) above at a temperature below 120°C and pressure less than 1 mTorr;
- v. saponification of the residue obtained in step (iv) above;
- vi. solvent extraction of unsaponifiable matter from the saponified product obtained in step (v) above;
- vii. mixing the unsaponifiable matters in step (vi) above with hydrocarbon solvent, short chain alcohol and water;
- viii. crystallization of phytosterols from the mixture obtained in step (vii) above;
- ix. separating the crystallized phytosterols and the mixture left is dried;
- x. mixing the dried mixture obtained in step (ix) above with a hydrocarbon solvent and short chain alcohol to partition squalene into hydrocarbon layer and vitamin E into alcohol layer.

13. (Cancelled)

14. (Previously presented) A method as claimed in claim 1, wherein hydrocarbon solvent and short chain alcohol is used in step e) to partition squalene into hydrocarbon layer and vitamin E into alcohol layer.

15. (Previously presented) A method as claimed in claim 1, wherein hexane and methanol is used in step e) to partition squalene into hexane layer and vitamin E into methanol layer.

16. (Previously presented) A method as claimed in claim 1, wherein step b) proceeds as follows:
i) first stage short path distillation is carried out on crude palm oil methyl esters;

ii) second stage short path distillation is carried out on the residue of the first stage short path distillation;

iii) third stage short path distillation is carried out on the distillate of the second stage short path distillation to yield phytonutrients concentrate as residue.

17. (Previously presented) A method as claimed in claim 16, wherein the second stage short path distillation is carried out at temperature of 130°C to 200°C and pressure less than 1 mTorr.

18. (Previously presented) A method as claimed in claim 16, wherein the first stage short path distillation is carried out at a temperature of 70°C to 120°C and pressure between 10 mTorr to 50 mTorr; the second stage short path distillation is carried out at temperature of 130°C to 200°C and pressure less than 1 mTorr; the third stage short path distillation is carried out at a temperature below 120°C and pressure less than 1 mTorr.

19. (Previously presented) A method as claimed in claim 1, wherein unsaponifiable matter is solvent extracted from saponified product obtained in step c) and phytosterols is crystallized from the unsaponifiable matter.

20. (Previously presented) A method as claimed in claim 19, wherein the unsaponifiable matter is mixed with hydrocarbon solvent, short chain alcohol and water and phytosterols is crystallized from the mixture.

21. (Previously presented) A method as claimed in claim 20, wherein the mixture left after separation of the crystallized phytosterols is dried and then mixed with hydrocarbon solvent and short chain alcohol to partition squalene into hydrocarbon layer and vitamin E into alcohol layer.

22. (Previously presented) A method as claimed in claim 21, wherein hexane and methanol is used to partition squalene and vitamin E.